

Christian E. Mammen, Oregon Bar No. 181778  
chris.mammen@wbd-us.com  
Carrie Richey (to be admitted *pro hac vice*)  
carrie.richey@wbd-us.com  
WOMBLE BOND DICKINSON (US) LLP  
1841 Page Mill Road, Suite 200  
Palo Alto, CA 94304  
Telephone: (408) 341-3067

John D. Wooten IV (to be admitted *pro hac vice*)  
jd.wooten@wbd-us.com  
WOMBLE BOND DICKINSON (US) LLP  
300 North Greene Street, Suite 1900  
Greensboro, NC 27401  
Telephone: (336) 574-8090

Attorneys for Plaintiff PASCO Scientific

UNITED STATES DISTRICT COURT

DISTRICT OF OREGON

PORTLAND DIVISION

PASCO SCIENTIFIC,  
Plaintiff,  
v.  
VERNIER SOFTWARE & TECHNOLOGY  
LLC,  
Defendant.

Case No.:

COMPLAINT FOR PATENT  
INFRINGEMENT  
DEMAND FOR JURY TRIAL

Plaintiff PASCO Scientific (“PASCO” or “Plaintiff”) files this Complaint for patent infringement against Defendant Vernier Software & Technology LLC (“Vernier” or “Defendant”), and alleges as follows:

**NATURE OF THE ACTION**

1. This is an action for patent infringement of United States Patent Nos. 10,481,173 (“the ’173 Patent”) and 10,753,957 (“the ’957 Patent”) (collectively, the “Asserted Patents”) under

the United States Patent Laws, 35 U.S.C. § 1 *et seq.* PASCO is an industry leading, award-winning science education company that has been creating and manufacturing hands-on science education tools and datalogging solutions since 1964. Educators in classrooms around the world use PASCO's science education tools and datalogging solutions. PASCO owns numerous patents covering its wide assortment of educational tools and technologies, including the Asserted Patents.

2. PASCO brings this action because Vernier chose to infringe PASCO's valuable intellectual property instead of securing a license from PASCO to use PASCO's patented technology. Vernier's infringing conduct is no accident—Vernier and PASCO compete in the same market for the same customers. In 2016, PASCO launched its Smart Cart, Demonstration Kit" the latest evolution of its original Aluminum Dynamics Cart, introduced in 1992, now with built-in sensors and Bluetooth® technology for conducting science experiments to study kinematics and dynamics. Based on the innovative technology incorporated in the Smart Cart, in January 2016, PASCO filed the patent application that led to the issuance of the '173 and '957 Patents. In 2018, and in the face of its own failed attempts to innovate, Vernier released its infringing "Go Direct® Sensor Cart"—a copycat of PASCO's product. Not only is Vernier's Go Direct® Sensor Cart a near-identical product to PASCO's Smart Cart, Vernier went so far as to copy the tracks on which the carts can be used.

3. PASCO seeks to recover damages for Vernier's wrongful conduct and to enjoin Vernier's continuing willful infringement.

### **PARTIES**

4. PASCO is a corporation formed under the laws of California with a principal place of business at 10101 Foothills Boulevard, Roseville, California.

5. Upon information and belief, Vernier is a limited liability company organized under

the laws of the state of Oregon with a principal place of business at 13979 SW Millikan Way, Beaverton, Oregon.

**JURISDICTION AND VENUE**

6. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. § 1 *et seq.* This Court has subject matter jurisdiction over this action under at least 28 U.S.C. §§ 1331 and 1338(a).

7. This Court has personal jurisdiction over Vernier because, upon information and belief, Vernier is organized and exists under the laws of state of Oregon and maintains its principal place of business in this state, through which it markets and sells or has marketed and sold the infringing products described herein.

8. This Court also has personal jurisdiction over Vernier because, upon information and belief, Vernier has marketed and sold the infringing products described herein to customers in this State.

9. Venue is proper in this District under 28 U.S.C. § 1400(b) because (i) Vernier resides in this District for venue purposes, *Andra Grp., LP v. Victoria's Secret Stores, L.L.C.*, 6 F.4th 1283, 1287 (Fed. Cir. 2021) (limited liability company “resides” for the purposes of §1400(b) in the state under whose laws the entity is organized), and (ii) upon information and belief, Vernier has committed acts of infringement, and has a regular and established place of business, in this District at 13979 SW Millikan Way, Beaverton, Oregon.

**FACTS**

**The Asserted Patents**

10. The '173 Patent is titled, “Wireless smart devices having integrated force, position, acceleration, and rotational sensing for science education.” The U.S. Patent and Trademark Office

(“PTO”) issued the ’173 Patent on November 19, 2019. PASCO is the owner by assignment of all rights, title, and interests in and to the ’173 Patent, including all rights to bring actions and recover damages for infringement thereof. A true and correct copy of the ’173 Patent is attached as **Exhibit A.**

11. The ’957 Patent is titled, “Wireless smart devices having integrated force, position, acceleration, and rotational sensing for science education.” The ’957 Patent is a continuation of the ’173 Patent, and is entitled to the same priority date as the ’173 Patent. The PTO issued the ’957 Patent on August 25, 2020. PASCO is the owner by assignment of all rights, title, and interests in and to the ’957 Patent, including all rights to bring actions and recover damages for infringement thereof. A true and correct copy of the ’957 Patent is attached as **Exhibit B.**

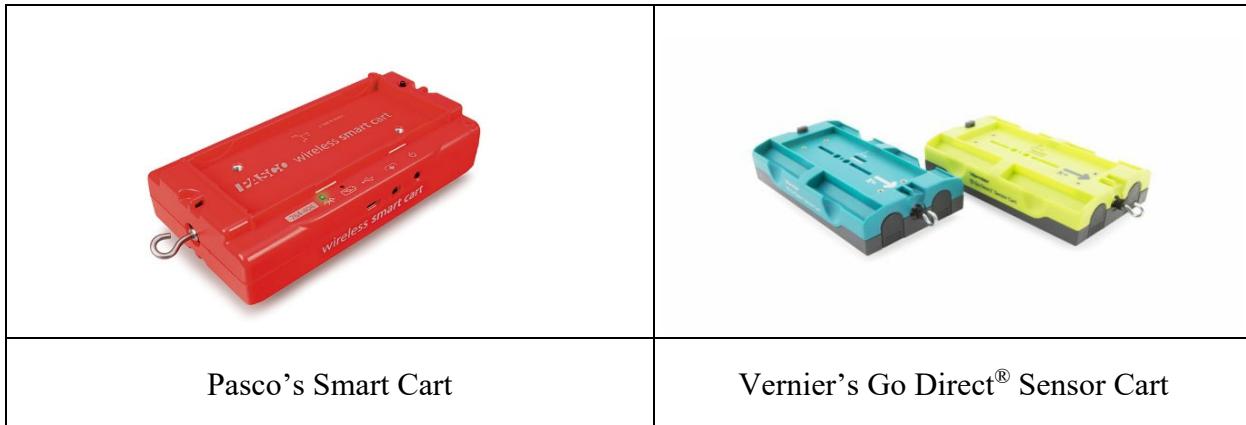
#### **Vernier’s Copying and Infringing Conduct**

12. Rather than compete fairly with PASCO in the marketplace and taking a license to the Asserted Patents, Vernier has copied PASCO’s innovative technology and infringed PASCO’s valuable intellectual property.

13. When Vernier attempted to innovate on its own, it failed. In 2014, Vernier applied for a patent titled “Cart movement detection system for dynamics track” directed to wirelessly detecting the movement of a cart on a track using an encoder sensor system, which issued in late 2016 (U.S Pat. No. 9,488,503). Upon information and belief, Vernier incorporated its patented encoder system technology into its cart. Unlike Vernier, PASCO did not copy Vernier’s purported invention. Rather, PASCO developed its own superior wireless motion encoder system. After PASCO launched its product, Vernier began to offer a copycat version of PASCO’s wireless motion encoder system, making its patented technology obsolete. Vernier allowed its patent to expire for failure to pay fees.

14. In 2016, PASCO released its Wireless Smart Cart (“Smart Cart”)—low-friction dynamics cart with onboard wireless sensors that measure force, position, velocity, three degrees of freedom in acceleration, and rotational motion. The Smart Cart is capable of connecting wirelessly to a computer or tablet via Bluetooth®, or it can connect to a computer or charger via a micro universal serial bus (“USB”) cable. The Smart Cart is packaged for users with a magnetic bumper, force hook, rubber bumper, and a USB charging cable. PASCO filed its application for the ’173 Patent on January 5, 2016, and it issued on November 19, 2019. PASCO filed its application for the ’957 Patent on November 19, 2019, as a continuation of the same application which is now the ’173 Patent, and the ’957 Patent issued on August 25, 2020.

15. Upon information and belief, in early 2018, Vernier announced the release of a Go Direct® Sensor Cart, which is a copy of PASCO’s Smart Cart, in order to “freeze the market” while it continued to refine its copycat design. Upon information and belief, in late 2018, Vernier actually released Go Direct® Sensor Cart, with the same look, feel, function and capabilities as PASCO’s:



16. Upon information and belief, Vernier designed its Go Direct® Sensor Cart to have the same wheelbase as PASCO’s Smart Cart to fit on PASCO’s track, as an attempt to steal PASCO’s customers and more easily copy PASCO’s design.

17. According to Vernier’s Go Direct® Sensor Cart User Manual (the “User Manual”),

the Go Direct® Sensor Cart is an educational tool which “can be used for hands-on kinematics and dynamics demonstrations but can also be used as a force or acceleration sensor.” **Exhibit C**, at 1. The Go Direct® Sensor Cart can be connected wirelessly via Bluetooth to a mobile device or a computer. *Id.* at 2. Further, Vernier asserts that each Go Direct® Sensor Cart includes at least the following: an “encoder wheel to report position, 3-axis accelerometer to measure independent acceleration, 50 N force sensor to measure push and pulls, Mass trays for changing total mass, Plunger for collision and impulse studies, Low friction wheels for uniform motion, [and an] Anti-roll peg.” *Id.* at 1.

18. These features allow the Go Direct® Sensor Cart to be used in educational experiments. Using the Go Direct® Sensor Cart, users can “[c]ollect position, velocity, and acceleration data as the cart rolls freely up and down an incline; [o]bserve collisions between two carts, test for the conservation of momentum, or measure energy changes during different types of collisions; [i]nvestigate the relationship between force, mass, and acceleration; [e]xamine the energies involved in simple harmonic motion; [and] measure a cart’s momentum change and compare it to the impulse it receives.” *Id.* The Go Direct® Sensor Cart includes an “accessory port” where various accessories may be added. *Id.* at 5. Go Direct® Sensor Cart contains a battery which is recharged via a USB type cable. *Id.* at 2-3.

19. At least because Go Direct® Sensor Cart can collect velocity and acceleration measurements of the carts, and contains a force sensor and accelerometer for impact calculations, upon information and belief, the Go Direct® Sensor Cart includes a processor communicatively coupled with sensors used to make various calculations that provides the results to Vernier’s software applications, such as Graphical Analysis™ 4.

20. Vernier has known about the ’173 Patent and its infringement thereof since at least

January 9, 2020, when Vernier received a letter from PASCO identifying this patent and the aspects of Go Direct® Sensor Cart that meet the claims of the patent. Vernier has known about the '957 Patent and its infringement thereof since at least September 4, 2020 by receipt of another letter from PASCO identifying the newly issued '957 Patent and the aspects of the Go Direct® Sensor Cart that meet the claims of the patent.

21. In view of at least Vernier's copying of PASCO's products and its ongoing infringement despite having received notice thereof, Vernier's infringement is deliberate, willful, and knowing, with conscious disregard of PASCO's rights, entitling PASCO to enhanced damages.

22. Vernier's infringement is causing irreparable harm and monetary damages to PASCO, entitling PASCO to both monetary damages and injunctive relief.

**COUNT I: INFRINGEMENT OF THE '173 PATENT**  
**UNDER 35 U.S.C. § 271**

23. PASCO incorporates by reference the allegations contained in the foregoing paragraphs as though fully stated herein.

24. Vernier and/or its customers and end users directly infringe one or more claims of the '173 Patent under 35 U.S.C. § 271(a), including at least Claim 1, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing the Go Direct® Sensor Cart in the United States without permission or license from PASCO. A preliminary, exemplary claim chart comparing the Go Direct® Sensor Cart to claims of the '173 patent is attached as **Exhibit D**.

25. By way of example only and not limitation, Claim 1 of the '173 Patent claims:

1. An integrated wireless device for collecting data that measures dynamic properties of the integrated wireless device during a science experiment comprising:

an accelerometer to generate acceleration data based on detecting a current rate of acceleration of the integrated wireless device over a period of time;

a shaft encoder to detect angular positional changes of a shaft or axle of the integrated wireless device over the period of time; and

at least one processing device communicatively coupled to the accelerometer and the shaft encoder, the at least one processing device is configured to decode angular position data of the encoder into positional data over the period of time and to time synchronize the acceleration data received from the accelerometer with the positional data decoded by the at least one processing device for the science experiment over the period of time.

26. The Go Direct® Sensor Cart meets each element in at least Claim 1 of the '173 Patent. For example, Go Direct® Sensor Cart is an integrated wireless device for collecting data that measures dynamic properties of the integrated wireless device during a science experiment. Vernier states that the Go Direct® Sensor Cart “can be used for hands-on kinematics and dynamics demonstrations but can also be used as a force or acceleration sensor … The Go Direct Go Direct® Sensor Cart can be used in a variety of experiments …” Ex. C, at 1.

27. The Go Direct® Sensor Cart includes an accelerometer to generate acceleration data based on detecting a current rate of acceleration of the integrated wireless device over a period of time. Vernier states, “Each dynamics cart includes … 3-axis accelerometer to measure independent acceleration.” *Id.* Further, Vernier states, “The Go Direct Go Direct® Sensor Cart can be used in a variety of experiments: … [to] [c]ollect position, velocity, and acceleration data as the cart rolls freely up and down an incline.” *Id.*

28. The Go Direct® Sensor Cart includes a shaft encoder to detect angular positional changes of a shaft or axle of the integrated wireless device over the period of time. Vernier states, “Each dynamics cart includes ... [an] [e]ncoder wheel to report position.” *Id.*

29. Because the Go Direct® Sensor Cart is capable of calculating the output measurements of various experiments, and because Vernier advertises that the carts include accelerometer and sensor components that provide accurate acceleration data, upon information and belief, the Go Direct® Sensor Cart includes at least one processing device communicatively coupled to the accelerometer and the shaft encoder, and the at least one processing device is configured to decode angular position data of the encoder into positional data over the period of time and to time synchronize the acceleration data received from the accelerometer with the positional data decoded by the at least one processing device for the science experiment over the period of time. Additionally, or in the alternative, when configured and used according to Vernier’s instructions with Vernier’s accompanying software applications, at least one such processing device is communicatively coupled to the accelerometer and the shaft encoder via the Go Direct® Sensor Cart’s Bluetooth® connectivity. Vernier states, “Velocity and acceleration are calculated in software from the position and time data.” *Id.* at 6. Vernier further states, “From counting the events and their sequence, the angle turned as well as its sense of rotation can be determined. The angle is converted to a change in position using the diameter of the sensing wheel.” *Id.*

30. Upon information and belief, Vernier also indirectly infringes the ’173 Patent under 35 U.S.C. §§ 271(b) and/or (c). Vernier induces the infringement of the ’173 Patent by its customers and end users in the United States as discussed above under 35 U.S.C. § 271(b) by encouraging customers and end users to use the Go Direct® Sensor Cart as instructed, described, and encouraged in the Go Direct® Sensor Cart User Manual, which Vernier knows infringes the

'173 Patent. Vernier has had knowledge of the '173 Patent since at least January 9, 2020, and Vernier knew or should have known that the use of the Go Direct® Sensor Cart by its customers and end users directly infringes the '173 Patent. The Go Direct® Sensor Cart infringes the '173 Patent, as shown above, and Vernier on its website and in the Go Direct® Sensor Cart User Manual directs, instructs, and encourages customers and end users of the Go Direct® Sensor Cart to use the Go Direct® Sensor Cart.

31. Upon information and belief, Vernier contributes to the infringement of the '173 Patent by its customers and end users in the United States as discussed above under 35 U.S.C. § 271(c). Vernier has had knowledge of the '173 Patent since at least January 9, 2020. The Go Direct® Sensor Cart is a material part of practicing at least the methods the '173 Patent, has no substantial non-infringing uses, is not a staple article of commerce, and is specifically made and adapted for use in an infringing manner, as discussed above.

32. Upon information and belief, Vernier has made and is continuing to make unlawful gains and profits from its infringement of the '173 Patent.

33. As detailed above, Vernier has continued its infringement despite having knowledge of the '173 Patent and PASCO's infringement claims.

34. Vernier's infringement has caused and will continue to cause irreparable harm to PASCO unless Vernier's infringing activities are permanently enjoined by this Court.

35. Vernier's infringement has also caused monetary damages to PASCO in an amount to be determined at trial.

**COUNT II: INFRINGEMENT OF THE '957 PATENT**  
**UNDER 35 U.S.C. § 271**

36. PASCO incorporates by reference the allegations contained in the foregoing paragraphs as though fully stated herein.

37. Vernier and/or its customers and end users directly infringe one or more claims of the '957 Patent under 35 U.S.C. § 271(a), including at least Claim 1, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing the Go Direct® Sensor Cart in the United States without permission or license from PASCO. A preliminary, exemplary claim chart comparing the Go Direct® Sensor Cart to claims of the '957 patent is attached as **Exhibit E**.

38. By way of example only and not limitation, Claim 1 of the '957 Patent claims:

1. A system for collecting data that measures dynamic properties of an integrated wireless device during a science experiment comprising:

a three-axis accelerometer to generate acceleration data in three dimensions based on detecting a current rate of acceleration of the integrated wireless device over a period of time;

an optical encoder to generate encoder signals in response to angular positional changes of an encoder wheel caused by movement of the integrated wireless device over the period of time;

at least one processing device communicatively coupled with the three-axis accelerometer and the optical encoder, the at least one processing device is configured to process the encoder signals generated by the optical encoder into positional data over the period of time and to time synchronize the acceleration data received from the accelerometer to the positional data processed by the at least one processing device to generate time synchronized dynamic properties of the integrated wireless device during the science experiment over the period of time.

39. The Go Direct® Sensor Cart meets each element in at least Claim 1 of the '957 Patent. For example, the Go Direct® Sensor Cart is a system for collecting data that measures dynamic properties of an integrated wireless device during a science experiment which may be connected wirelessly. Vernier states that the Go Direct® Sensor Cart “can be used for hands-on kinematics and dynamics demonstrations but can also be used as a force or acceleration sensor ... The Go Direct Go Direct® Sensor Cart can be used in a variety of experiments ...” Ex. C, at 1.

40. The Sensor includes a three-axis accelerometer to generate acceleration data in three dimensions based on detecting a current rate of acceleration of the integrated wireless device over a period of time. Vernier states, “Each dynamics cart includes … 3-axis accelerometer to measure independent acceleration.” *Id.* Further, Vernier states, “The Go Direct Go Direct® Sensor Cart can be used in a variety of experiments: … [to] [c]ollect position, velocity, and acceleration data as the cart rolls freely up and down an incline.” *Id.*

41. The Go Direct® Sensor Cart includes an optical encoder to generate encoder signals in response to angular positional changes of an encoder wheel caused by movement of the integrated wireless device over the period of time. Vernier states, “Each dynamics cart includes … [an] [e]ncoder wheel to report position.” *Id.* Vernier further states, “The position channel uses an optical encoder system. As the sensing wheel rotates, the position of attached disc with radial markings is detected by a pair of optical sensors.” *Id.*

42. Because the Go Direct® Sensor Cart includes a 3-axis accelerometer that is used to generate acceleration data, and because it includes an encoder wheel to report wheel position, and detects wheel rotation using optical sensors, upon information and belief, the Go Direct® Sensor Cart includes at least one processing device communicatively coupled with the three-axis accelerometer and the optical encoder, the at least one processing device is configured to process the encoder signals generated by the optical encoder into positional data over the period of time and to time synchronize the acceleration data received from the accelerometer to the positional data processed by the at least one processing device to generate time synchronized dynamic properties of the integrated wireless device during the science experiment over the period of time. Additionally, or in the alternative, when configured and used according to Vernier’s instructions with Vernier’s accompanying software applications, at least one such processing device is

communicatively coupled to the accelerometer and the shaft encoder via the Go Direct Go Direct® Sensor Cart’s Bluetooth connectivity. Vernier states, “Velocity and acceleration are calculated in software from the position and time data.” *Id.* at 6. Because the sensors are used to make the calculations, and provide them to Vernier’s software applications, such as to a device running Graphical Analysis™ 4, upon information and belief, a processor is communicatively coupled with the sensors. Furthermore, upon information and belief, the application will utilize the data from the accelerometer and encoder. According to Vernier, “From counting the events and their sequence, the angle turned as well as its sense of rotation can be determined. The angle is converted to a change in position using the diameter of the sensing wheel.” *Id.*

43. Upon information and belief, Vernier also indirectly infringes the ’957 Patent under 35 U.S.C. §§ 271(b) and/or (c). Vernier induces the infringement of the ’957 Patent by its customers and end users in the United States as discussed above under 35 U.S.C. § 271(b) by encouraging customers and end users to use the Go Direct® Sensor Cart as instructed, described, and encouraged in the Go Direct® Sensor Cart User Manual, which Vernier knows infringes the ’957 Patent. Vernier has had knowledge of the ’957 Patent since at least September 4, 2020, and Vernier knew or should have known that the use of the Go Direct® Sensor Cart by its customers and end users directly infringes the ’957 Patent. The Go Direct® Sensor Cart infringes the ’957 Patent, as shown above, and Vernier on its website and in the Go Direct® Sensor Cart User Manual directs, instructs, and encourages customers and end users of the Go Direct® Sensor Cart to use the Go Direct® Sensor Cart.

44. Upon information and belief, Vernier contributes to the infringement of the ’957 Patent by its customers and end users in the United States as discussed above under 35 U.S.C. § 271(c). Vernier has had knowledge of the ’173 Patent since at least September 4, 2020. The Go

Direct® Sensor Cart is a material part of practicing at least the methods the '957 Patent, has no substantial non-infringing uses, is not a staple article of commerce, and is specifically made and adapted for use in an infringing manner, as discussed above.

45. Vernier has sold or offered to sell the Go Direct® Sensor Cart in an infringing configuration to its customers, who have used the Go Direct® Sensor Cart in the United States.

46. Upon information and belief, Vernier has made and is continuing to make unlawful gains and profits from its infringement of the '957 Patent.

47. As detailed above, Vernier has continued its infringement despite having knowledge of the '957 Patent and PASCO's infringement claims.

48. Vernier's infringement has caused and will continue to cause irreparable harm to PASCO unless Vernier's infringing activities are permanently enjoined by this Court.

49. Vernier's infringement has also caused monetary damages to PASCO in an amount to be determined at trial.

**JURY DEMAND**

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, PASCO respectfully requests a trial by jury of any issues so triable.

**PRAYER FOR RELIEF**

WHEREFORE, PASCO respectfully requests that:

- A. Vernier be adjudged by this Court to have directly, indirectly, and/or contributorily infringed one or more claims of each of the Asserted Patents under 35 U.S.C. § 271;
- B. Vernier be adjudged by this Court to have willfully infringed one or more claims of each of the Asserted Patents from the time Vernier became aware

of the infringing nature of its conduct, and that PASCO be awarded treble damages for the period of such willful infringement pursuant to 35 U.S.C. § 284;

- C. The Court find the Asserted Patents valid and enforceable;
- D. Vernier be ordered by this Court to account for and pay PASCO damages adequate to compensate PASCO for the infringement of one or more claims of the Asserted Patents, pursuant to 35 U.S.C. § 284;
- E. This Court enter a permanent injunction pursuant to 35 U.S.C. § 283 preventing continuing infringement of one or more claims of each of the Asserted Patents;
- F. This case be deemed exceptional and PASCO be awarded interests, costs, expenses, and reasonable attorneys' fees for this suit as provided by 35 U.S.C. § 285; and
- G. PASCO be awarded such other and further relief as this Court may deem just and proper.

Date: October 18, 2021

Respectfully submitted,

*/s/Christian E. Mammen*

Christian E. Mammen, Oregon Bar No. 181778

*Attorney for Plaintiff PASCO Scientific*